IN THE CLAIMS

This listing of claims replaces all prior listings:

1. (Currently Amended) A method for controlling phase transition of a fractal-coupled structure ~~characterized in controlling phase transition by~~ comprising the step of controlling fractal dimension of a fractal-coupled structure overall or locally.

2. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 1, wherein phase transition temperature is controlled by controlling fractal dimension of said fractal-coupled structure.

3. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 1, wherein said fractal-coupled structure is a ferromagnetic fractal-coupled structure and ferromagnetic phase transition temperature is controlled by controlling fractal dimension of said ferromagnetic fractal-coupled structure.

4. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 1, wherein said fractal-coupled structure is a ferromagnetic fractal-coupled structure whose dimension is not smaller than 2.5.

5. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 1, wherein generation of quantum chaos in said fractal-coupled structure is controlled by controlling fractal dimension of said fractal-coupled structure.

6. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 5, wherein said fractal-coupled structure is a fractal-coupled structure added with a magnetic impurity.

7. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 5, wherein said phase transition is Anderson transition.

8. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 1, wherein said phase transition is metal-insulator transition.

9. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 8, wherein said fractal-coupled structure is controlled to exhibit a half-filled electron density.

10. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 8, wherein said fractal-coupled structure is composed of an array of quantum dots.

11. (Currently Amended) The method for controlling phase transition of a fractal-coupled structure according to claim 10, wherein said quantum dots are made of heterojunction of compound semiconductors.

12. (Canceled).

13. (Currently Amended) ~~The ferromagnetic fractal-coupled structure according to claim 12~~ A ferromagnetic fractal-coupled structure comprising a magnetic material configured to have self-similarity, wherein ferromagnetic phase transition temperature is determined by selection of fractal dimension that characterizes the self-similarity of said magnetic material.

14. (Currently Amended) The ferromagnetic fractal-coupled structure according to claim ~~12~~ 13 wherein said fractal dimension of said magnetic material is not smaller than 2.5.

15. (Canceled).

16. (Currently Amended) ~~The ferromagnetic fractal-coupled structure according to claim 15~~ A fractal-coupled structure configured to have self-similarity and random magnetic fields, wherein said random magnetic fields ~~are applied by adding~~ result from a magnetic impurity ~~to~~in the component material.

17. (Original) A fractal-coupled structure characterized in being configured to have self-similarity and having a half-filled electron density.

18. (Currently Amended) ~~The ferromagnetic fractal-coupled structure according to claim 17~~ A fractal-coupled structure configured to have self-similarity and having a half-filled electron density, wherein interaction of electrons in an electron system can be increased larger than the band with, and Mott transition exists, said Mott transition being controlled by fractal dimension of the system.

19. (Currently Amended) ~~The ferromagnetic fractal-coupled structure according to claim 17~~ A fractal-coupled structure configured to have self-similarity and having a half-filled electron density, wherein said fractal-coupled structure is composed of an array of quantum dots made of heterojunction of compound semiconductors.

20. (Currently Amended) The ferromagnetic fractal-coupled structure according to claim 19, wherein said fractal-coupled structure forms a semiconductor device or an electronic device.

21. (Currently Amended) An information processing method ~~characterized~~ in ~~executing~~ which information processing is accomplished by controlling phase transition through overall or local control of fractal dimension of a fractal-coupled structure.

22. (Currently Amended) An information storage method ~~characterized~~ in ~~performing~~ which information storage is accomplished by controlling phase transition through overall or local control of fractal dimension of a fractal-coupled structure.

23. (Currently Amended) The information storage method according to claim 22, wherein many-value information storage is performed.

24-26. (Canceled).

27. (Currently Amended) ~~The information storage medium according to claim 26 using~~ An information storage medium having a fractal-coupled structure configured to have self-similarity and random magnetic fields and coexistence of degeneracy of density of states caused by the self-similarity and a strong quantum chaotic state, which appear in said fractal-coupled structure.

28. (Currently Amended) An information storage medium ~~characterized in using~~ comprising a fractal-coupled structure which is configured to have self-similarity and ~~has~~ have a half-filled electron density.

29. (Original) An information processing device ~~characterized in executing~~ in which information processing is accomplished by controlling phase transition through overall or local control of fractal dimension of a fractal-coupled structure.

30. (Currently Amended) An information processing device characterized ~~in~~by:

~~using~~ a ferromagnetic fractal-coupled structure made of a magnetic material configured to have self-similarity; and

~~executing~~ information processing by controlling phase transition through overall or local control of fractal dimension of said fractal-coupled structure.

31. (Currently Amended) An information processing device characterized ~~in~~by:

~~using~~ a fractal-coupled structure configured to have self-similarity and applied with random magnetic fields; and

~~executing~~ information processing by controlling phase transition through overall or local control of fractal dimension of said fractal-coupled structure.

32. (Currently Amended) An information processing device characterized ~~in~~by:

~~using~~ a fractal-coupled structure configured to have self-similarity and having a half-filled electron state; and

~~executing~~ information processing by controlling phase transition through overall or local control of fractal dimension of said fractal-coupled structure.

33. (Currently Amended) An information storage device ~~characterized in executing~~ in which information storage is accomplished by controlling phase transition through overall or local control of fractal dimension of a fractal-coupled structure.

34. (Currently Amended) An information storage device characterized ~~in~~by:

~~using~~ a ferromagnetic fractal-coupled structure made of a magnetic material configured to have self-similarity; and

~~executing~~ information storage by controlling phase transition through overall or local control of fractal dimension of said fractal-coupled structure.

35. (Currently Amended) An information storage device characterized ~~in~~by:

~~using~~ a fractal-coupled structure configured to have self-similarity and applied with random magnetic fields; and

~~executing~~ information storage by controlling phase transition through overall or local control of fractal dimension of said fractal-coupled structure.

36. (Currently Amended) An information storage device characterized ~~in~~:

~~using~~ a fractal-coupled structure configured to have self-similarity and having a half-filled electron density; and

~~executing~~ information storage by controlling phase transition through overall or local control of fractal dimension of said fractal-coupled structure.